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ABSTRACT

This report, which is based primarily on figures released by the Organisation for Economic Cooperation and Development (OECD), reviews the indicators available for international comparisons of vocational educacion and training (VET) to clarify the following issues: the kinds of comparability problems that exit, their extent and severity, their causes, and possible ways of correcting them. Chapter 1 provides an overview of existing international comparative studies of VET. Chapter 2 looks at the data sets currently used by the OECD in international comparisons of VET. Chapters 3-5, which are devoted to the problems associated with use of the data sets, address the following topics: problems of comparison (definitions, comparisons in practice, case studies in comparative analysis); defining the "average" country (problems and concerns in determining the "average," theoretical considerations, absolute and comparative advantage); and lessons from existing methods (problems of scope or coverage, categorization, and measurement when collection data). Chapters 6-7, which consider arguments for making meaningful comparisons of VET and place particular emphasis on the Australian perspective, emphasize the need to take the uniqueness of countries' economies into account when comparing their VET systems and offer recommendations regarding putting theory into practice. Chapter 8 reviews the report's findings. (Contains 33 references.) (MN)

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of vocational education and training

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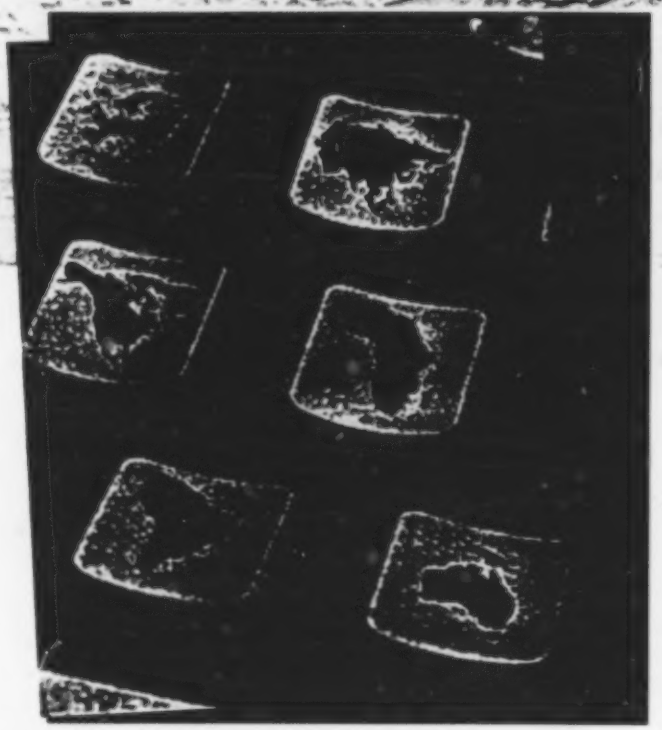

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of vocational education and training

Brett Freeland

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The Organisation for Economic Cooperation and Development (OECD) brings together 29 countries sharing the principles of the market economy, pluralist democracy and respect for human rights.

The following is a list of member countries and the year in which they received membership of the OECD.

Australia (1971)
Austria (1961)
Belgium (1961)
Canada (1961)
Czech Republic (1995)
Denmark (1961)
Finland (1969)
France (1961)
Germany (1961)
Greece (1961)
Hungary (1996)
Iceland (1961)
Ireland (1961)
Italy (1961)
Japan (1964)
Korea (1996)
Luxembourg (1961)
Mexico (1994)
The Netherlands (1961)
New Zealand (1973)
Norway (1961)
Poland (1996)
Portugal (1961)
Spain (1961)
Sweden (1961)
Switzerland (1961)
Turkey (1961)
United Kingdom (1961)
United States (1961)

Executive summary

Introduction

THE REPORT CONSIDERS those indicators available for international comparisons of vocational education and training (VET). The principal data examined in the report are the Organisation for Economic Co-operation and Development's (OECD) annual *Education at a glance: OECD indicators* publications (OECD 1997, 1996). The range of issues addressed by this report includes:

- determining what kinds of comparability problems exist
- determining how widespread and severe comparability problems are
- determining the causes and nature of comparability problems
- a discussion of alternative methods to correct comparability problems

Comparative analyses

In recent years international comparative analysis has become a commonly used tool for policy-based decision-making. There has been a general acceptance of the findings of comparative studies and the field of VET has not escaped the influence of such studies.

International comparisons, as the name suggests, compare data derived from different countries. Comparative analyses attempt to achieve various objectives. Describing the existence of the same attribute in different locations is one such objective and describing the relative performance of countries based on measurable attributes is another. Determining whether the effort and funding put towards education and training is equal to that of national competitors is the major justification of these comparative analyses.

Problems of comparison

This report considers the current methodology utilised in the development and implementation of comparative analyses and finds them to be flawed due to several faults in the methodology and data collection.

Data used in comparative analyses are flawed for various reasons including the:

- validity (consistency across countries) of data
- accuracy of data

Several faults of international comparative statistics as they relate to education and training have also been identified. Faults can be introduced into data collection through the data collection processes at the national level, the compilation of the data at the international level and through the inappropriate use of the data during analytical processes.

Effective data and methodology

No single version of best practice for comparative analysis of education and training has been found. However, the following questions may be used as guidelines and applied in the development and assessment of comparative analyses. If the questions can be answered in the affirmative, then the results derived from comparative analyses are more likely to be relevant and applicable.

- Are the data used comparable?
- Can the data be compared to data from other comparative analyses?
- Are the countries included in the comparison reasonably comparable in terms of their socio-economic profile?

Conclusions

Understanding the local context, its society and economic situation as well as gathering reliable data are essential to developing meaningful results from international comparisons. Comparative analyses currently tend to overlook the important need for accompanying contextual descriptions to support results presented.

If comparative analysis is to remain a useful research method, results must cross academic boundaries and describe, coherently and meaningfully, the national contexts from which data are attained. Descriptions and caveats accompanying findings from comparative analyses need to be as detailed and inclusive as possible, and detailed contextual information is essential. Such information provides users of the results with uniform and relevant perspectives of countries included in the comparison. Only with adequate and consistent data collection, theoretically sound methodology, and comprehensive contextual information, will the results of international comparative analyses remain relevant and useful to potential users.

1 Introduction

Aims of report

THE REPORT considers indicators available for international comparisons of vocational education and training (VET). The report focusses on figures released by the Organisation for Economic Co-operation and Development (OECD) as the *Education at a glance: OECD indicators*. These data have been published annually since 1993. Problems associated with international comparisons are discussed and methodologies capable of providing meaningful international comparisons are presented. The principal focus of the study is the application of comparative methodologies used to investigate vocational education development and training policies. The range of substantive issues addressed in this report includes determining what kinds of comparability problems exist, how widespread and severe they are, what causes them and how they might be corrected.

Structure of report

The report is divided into three parts. The first section—chapter 2—considers the current data sets used by the OECD in international comparisons of VET. Alternative international comparisons are also presented. Australia's representation in these figures emphasised. The second section—chapters 3 to 5—outlines the problems associated with the use of the data sets. The concept of the 'average' country is discussed at length. Background information relevant to the countries included in the OECD data and their various education and training systems is considered when interpreting this information. A basic description of international VET statistics is presented and followed by examples of how countries interpret *Indicators of Education Systems* (INES) data. The final section—chapters 6 and 7—considers arguments for making meaningful international comparisons of VET. Also included are suggestions for the collection of appropriate data sets and methodologies that are appropriate to make the comparisons. Particular emphasis is placed on the Australian perspective. Examples of international comparisons from other countries are also presented.

International comparisons: an overview

International comparative studies of education can assist educators, policy-makers, researchers and society in general to measure progress towards the realisation of national education and training goals, thereby improving education and training systems.

There has recently been an increased level of interest in international comparisons of education. Education is considered to be an investment in human skills. It assists economic development and growth and increases productivity. These influences can, in turn, contribute to personal and social development potentially reducing social inequality. Trends towards globalisation, deregulation and more open economies have contributed to broad economic and social changes that have in turn affected VET systems in many OECD countries. No equation, however, can fully describe the relationships that exist between education and training and personal, social and economic development. A series of specially developed indicators can be used to provide a better understanding of the costs and benefits associated with educational reform. The desire to determine the effects of these economic and social changes has led to an increased emphasis on international comparative studies.

As there are no absolute standards of educational achievement or performance, comparative studies are vital to policy-makers in setting realistic standards and in monitoring the success of their educational systems. Comparative studies are undertaken to complement studies conducted within domestic boundaries whereby countries collect extensive data regarding local education and training. To make best use of this data both national and international comparisons should be undertaken.

In this report we have focussed on the concept of measuring and ranking attributes of national systems through comparative analyses. However, there is also much to be learnt from overseas VET systems. Politicians, civil servants and academics have invested significant amounts of time and effort into providing policy-makers with data about how such systems operate.

Education policy is an area which appears to have benefited from international comparisons of this sort. References to the educational systems and practices of other countries, formerly rare, now figure prominently in national debates over educational policy. Since the 1980s, international comparisons have become a common feature of assessments of the effectiveness of Australian training institutions. Effectiveness of expenditure is also measured using comparative analyses. Appraisals of VET systems include *Annual national report: Australia's vocational education and training system*, published by Australian National Training Authority (ANTA) since 1994. Decision-makers want to know whether students in Australia undertake similar levels of training and education, and are prepared for careers to the same extent, as are students overseas. They also want to know whether or not curricula are as demanding,

and whether graduation requirements are as stringent abroad as they are at home. Also of interest is whether or not training systems incur similar costs.

The heightened demand for comparative information has stimulated the collection of education and training statistics that are common to all countries. For example all OECD countries collect information on highest level of education attained, student achievement and school retention rates. How countries compare on these indicators can then be used to support and justify educational reforms. The1997 OECD report *Education at a glance* noted:

> *Variation in* [educational] *achievement between countries is substantial, with average Japanese and Korean 4th graders outperforming the average Portuguese 8th graders in mathematics.*
>
> (OECD 1997 p.21)

Making such comparisons however does not always make good sense. Flaws in simplistic comparisons such as the example above will be explored in detail later in the report.

The increasing globalisation of world economies has meant that countries have tended to make more frequent use of international comparisons to reflect on their own educational policies and practices. This has led to major reforms in VET training systems throughout advanced economies. However, whether or not reforms that have been successfully implemented in one system can be applied in other systems to the same extent, is uncertain. This is because structural and cultural issues combine to provide a different context for educational reform.

Australia's VET system, for example, contrasts quite markedly with those of our economic competitors. Diversity in the skills required, the funding mechanisms for institutional structures, the role of industry and the availability of employment options mean that it is not always possible to transfer practices that have worked elsewhere.

Increasingly, the efficient establishment of effective mechanisms for allocating public and private resources to VET are seen to be essential to maintaining a nation's competitive edge. At home, increased competition means that education systems need to become more effective in delivering skills, and more efficient in the way they do this. It is for this reason that both national and international comparisons across indicators are made.

Are the results from international comparisons useful and relevant to their intended purpose? Keep (1991) believes that they generate an abundance of results relevant to VET policy and have provided a pivotal role in defining the perceptions of problems to which policy responses are required (Ryan 1991, p.2).

International comparisons are commonly presented in OECD publications and are used by lobby groups and those with political interests to support calls

for changes to be made to educational and related government policies. However, caution should be exercised when considering the results from international comparative studies since practical conclusions from comparisons are generally indirect and difficult to draw. Other considerations (exogenous factors) are rarely equal among countries included in analyses. Other countries' VET systems are generally too different for piecemeal borrowing of institutions or practices to be effective.

International comparisons are used for description and explanation. Their two key functions are a determination of the worth or value of a system and gathering information in order to make a decision about an aspect of a program associated with the effectiveness of VET. Comparisons may focus on the appropriateness, efficiency or effectiveness of VET and may also be used to increase awareness of programs or activities and to promote the benefits of programs and VET in general (McDonald & Hayton 1998, p.363 in Robinson & Thomson 1998). Comparative studies have documented differences in vocational preparation between countries and have also been used to explain why those differences have emerged and why they are important. Nevertheless, description faces its own difficulties, such as non-comparability of national categories.

Non-statistical, qualitative contributions also derive significant value from international comparisons. International comparisons often provide insights to qualitative factors that cannot be assessed statistically but may be just as important to the successful implementation of policy directions. Perhaps the most significant way in which international comparisons can assist policy-makers is in developing or uncovering an understanding of the network of factors that underlie particular outcomes in particular countries. This explanatory function is of utmost importance in social effect analyses.

Different political, cultural, economic and industrial contexts further confound attempts to draw practical lessons. For such comparisons 'societal analysis', or at least a recognition of the interdependence of VET and other economic and social structures is necessary (Maurice et al. 1986).

Despite the lack of obvious alternatives to international comparisons there are real dangers associated with taking the initiatives, mechanisms or institutions of specific countries out of national context. The various problems associated with international comparisons will be covered extensively throughout this report.

The major problem with international comparisons is that the social and economic environment influencing how a job is undertaken cannot be transferred to another location. There are also profoundly important influences not directly associated with or influenced by policy. Despite these words of caution, international comparisons of education and training policies and institutions are recognised as being valuable for:

- identifying trends in how education and training policy and performance is *changing internationally*
- throwing a critical light on 'taken for granted' assumptions about how existing institutional and social arrangements operate
- suggesting alternative approaches to attaining desired outcomes from VET

Through examination of the training practices and institutions of other countries, the limited range of variation experienced in the home country can be extended. Such examinations expand the range of observations in the areas of interest. However, international comparisons of VET are not as assessable and therefore simplistic as they might at first appear. OECD data classifications do not have a separate category for VET and VET is included in 'upper secondary' and 'non-university tertiary' categories depending on the level of course studied and the country described in the data. Australian VET statistics are contained in both classifications which means international comparisons of VET based on OECD data are blurred at the margins.

Educational structures, processes and outcomes vary across countries. Furthermore, these differences are combined with variations in data collection methods and classification methods. Therefore, a caveat should accompany any international comparisons of VET statistics. Unfortunately the lack of caveats associated with conclusions is generally overlooked by authors of reports and users of international comparative statistics.

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2 Comparative analysis

THERE ARE TWO forms of comparative analysis studies. *Explanatory* studies are designed to investigate the relationship between educational practices and outcomes. *Descriptive* studies describe critical aspects of educational systems practices and outcomes. Both types of analyses have the capacity to provide valuable insights into the nature of national economic and social systems.

Explanatory studies tend to examine relationships between variables and look for causal explanations. These types of studies are designed to identify influences on learning and determine how learning can be improved.

Descriptive studies collect data on student performance, content of curriculum, teacher salaries and other critical indicators of educational achievement. The value of these studies is dependent upon their rigorous sampling, their capability to generate national estimates, and the speed at which the findings can be reported. In addition, many of these studies collect data which can be periodically monitored. However, these studies still have major drawbacks. They usually provide little or no data to explain the reasons for observed differences which means that many questions are left unanswered. Descriptive studies can also be used to measure trends, establish international comparisons and chart the progress of educational reform. This data is of interest to governments, as they have become increasingly concerned with the relationship between national training investments and economic performance.

Comparative analyses comprise two main functions. First of all they can be used to determine the worth of a particular policy or system in terms of its efficiency, effectiveness or relevance.

> *Comparisons are sometimes used to increase awareness of programs or activities and promote the benefits of programs and VET in general.*
>
> (Cronbach et al. 1980 cited in McDonald & Hayton 1998, p.364)

And secondly they can also be used to gather information for making decisions about the value associated with major policy reforms.

The quest for economic efficiency and effectiveness is universal. It drives the policies and practices of governments and enterprises at the local level and is influenced by international interactions. To achieve their social and economic objectives, governments and enterprises rely upon a constant supply of information relating to new and innovative programs and initiatives. International comparisons are invariably able to accomplish this.

The OECD education indicators

Educational policy-makers today have a richer array of international data relating to trends in OECD member countries than ever before. The OECD's educational indicators project has published successive volumes of indicators since 1993, presenting comparable information on a wide range of education and training topics. In interpreting the data and the findings contained in publications, users of the data ideally want to identify key measures to determine how well individual education systems are performing.

Throughout OECD countries, governments are seeking effective policies for enhancing economic productivity. These include employing incentives to promote the efficiency of the administration of schooling and seeking additional resources to meet increasing demands for education.

To inform the processes of policy formation and to reinforce the public accountability of education systems, the OECD continually seeks to develop indicators which have the capacity to provide an insight into the comparative functioning of education systems. The comparisons presented in OECD publications focus on human and financial resources invested in education and returns on these investments.

OECD publications, such as the *Education at a glance* series, have had a strong influence on policy-makers since their first release. Information provided by the OECD on the social and economic performance of member countries over the last 20 years has highlighted the competitive advantage enjoyed by the economies of Germany, Japan, France and Sweden over the economies of Britain and the United States. The competitive advantage enjoyed by these countries has been attributed in part to the higher levels of skills possessed by workers in these economies.

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The use of international benchmarking to raise the awareness of alternative ways of improving efficiency and effectiveness has become part of any national examination of existing arrangements; that is, a quantitative description of the functioning of education systems can enable countries to see themselves in the light of other countries' performances. Through international comparisons, countries may recognise weaknesses and strengths that may be otherwise overlooked during domestic debates regarding vocational education and training policy. The OECD data provide an indicator on whether or not variations in educational experiences within a country are a unique manifestation or if they mirror differences observed elsewhere.

The OECD is continually refining its methods for developing indicators that will provide a genuine indication of performance relative to policy objectives. It is also continually reviewing its guidelines for valid and feasible data collection.

A development that has proved instrumental for both highlighting concerns about comparability, and providing the framework for resolving these problems was the OECD's INES project. This project, aimed to develop useful and policy-relevant education indicators, suitable for providing information to decision makers in all OECD member countries.

One interesting aspect of the OECD *Education at a glance* series is the inclusion of a series of diagrams describing the structures of the education and training pathways within each of the member countries. On their own, the diagrams provide only a simplistic representation of specific education and training systems; however, when diagrams for different countries are compared, similarities and variations can be clearly identified.

In general, the OECD publications contain detailed descriptions of the problems associated with international comparisons and data collection for each of the key measures. The effort that has gone into providing caveats and explanations for observations is testimony to the OECD's recognition of the difficulty of making meaningful international comparisons.

3 Problems of comparison

Definitions

THROUGHOUT THIS REPORT, there are many references to comparability problems, deviations from comparability, and comparable and non-comparable statistics. It is important to be explicit at the outset about how these terms are used. Broadly speaking, statistics are said to be internationally comparable when they refer to the same attribute or characteristic in all countries. 'Comparability', so defined, is attainable to the extent that the different countries concerned base their statistics on uniform concepts, equivalent categories and consistent operational definitions. Statistics will be non-comparable when they reflect differences among the countries in concepts, categories, or operational definitions.

We refer to the definitional components of the reported differences in a measure as being the deviations from comparability. Each conceptual or definitional discrepancy that plays a role in making expenditure statistics inconsistent among countries, is referred to in this report as a comparability problem. In other words, comparability problems are *the cause* and non-comparability of statistics or deviations from comparability are *the result*.

The main general types of comparability problems affecting comparisons of international statistics are differences in the scope or coverage of statistics, differences in categorisation and differences in the methods used to measure the elements used in comparisons. In any country, VET can be said to be located in one or more of at least three distinct institutional settings. These include schools, vocational education institutions, and enterprises. Variation in the mode of delivery of VET also makes comparability difficult.

Comparability and validity

Comparability and validity are closely related but not equivalent concepts. Statistics have to be comparable to be valid, but comparability alone does not guarantee validity. The validity of a set of internationally comparative statistics depends not only on whether the statistics provided by different countries are

mutually consistent but also on the correspondence between the statistics and the underlying theoretical constructs. The appropriate construct in turn depends upon the purpose of the comparisons, or on the questions posed.

In practice, the distinction between comparability and validity is often blurred because the statistics are collected for general or multiple purposes, not to answer specific questions identified in advance.

Comparability and accuracy

Concerns about the comparability of statistics should not be confused with concerns about the accuracy of the statistics submitted to international agencies. Even perfectly accurate statistics (based on a country's own definition) will not be comparable with perfectly accurate statistics from another country when they measure different attributes.

Comparability is a matter of degree

As is evident from the discussion above, comparability is a matter of degree because perfect comparability is unattainable. Deviations from comparability are bound to occur between countries which have even moderately different education, and statistical systems or even, for that matter, among states within a single federal system. Fortunately, perfect comparability is not required for comparisons of international statistics to be useful. What we need to know in practice, is whether the statistics of different countries are sufficiently compatible for comparisons to be made; comparisons which are informative and not misleading. This is especially important for the development of policy.

Being pedantic about specific cut-off points for comparisons is not necessary since the acceptable degree of non-comparability depends on the intended application of the statistics. For instance, where the need is to rank countries by aggregate measures of gross domestic product (GDP) or to categorise countries into groups of high and low characteristics of spending, relatively large deviations from comparability can be tolerated. Where the comparisons are more specific in their descriptions, higher degrees of comparability are required. Whether imperfectly comparable statistics can be used in the comparative analysis is a judgment that must be made by the user. This means taking into account the available information on the nature, prevalence and severity of the comparability problems.

Comparisons in practice

OECD data are commonly presented either as individual country means or as a percentage of the OECD total. Country means are calculated as an unweighted mean of the data values of all countries for which data are available or can be estimated. The country mean refers to an average of the data values at the level

of the national systems and can be used to answer questions of how an indicator in a given country compares with the average for all countries.

The second method of data representation is the OECD total. This value is a weighted mean of the data values of all countries for which data are available or can be estimated. It reflects the value of a given indicator when the OECD area is considered as a whole. This approach is taken for the purpose of comparing for example, the expenditure figures for individual countries, with those of the entire OECD, for which valid data are available. The OECD is considered as being a single entity.

One of the familiar problems associated with comparative research is the small number of countries included in the analyses. Even as many as ten countries may provide too few degrees of freedom or comparative analysis to draw reliable inferences. Analyses based on case studies have a greater potential to explain, and describe, characteristics of countries and their systems, than analyses which simply compare statistics.

Case studies in comparative analyses

In this section the difficulties of making meaningful comparisons by using information obtained from specific case studies are discussed. Each of the case studies is an international comparative analysis of policies and practices related to VET.

International education expenditure comparability study

Conducted by the United States Department of Education in 1997, the international expenditure comparability study was based on case studies of ten selected OECD countries, including Australia. Each case study was designed to yield information on the expenditure statistics of the country both internally and relative to other countries, in addition to providing information on the pertinent features of the country's education and education finance systems.

Analysis of case study findings was first carried out by country and then in cross-country comparisons. The cross-country comparisons are of most interest to this study. Justification for the study came from the observation that,

> *the international expenditure statistics collected and published by the OECD... in the past reflected multiple, serious, and widespread comparability problems, but the size and significance of the resulting deviations from comparability varied, depending on the expenditure categories, levels of education and countries in question*
>
> (US Department of Education 1997 pp.11-49).

Focussing specifically on the second edition of *Education at a glance* (OECD 1993), the department concluded that many of the comparative expenditure indicators presented were too distorted by comparability problems to be taken

at face value or to be portrayed to policy-makers or the public as accurate representations.

International comparisons of vocational education and training for intermediate skills

Ryan (1991) suggests that comparative research has become an industry in its own right. Comparative research has the advantage over case studies and particularly over grouped sets of single-nation studies favoured by some international agencies, by dealing with two or more observations rather than only one. The informational advantage is small however, as both types of research suffer from inadequate, and normally negative degrees of freedom. That is, the number of variables exceeds the number of countries examined. The main advantage of comparisons over case studies lies elsewhere. The research is pushed from the descriptive towards the analytical as differences in the data raise a number of questions.

In light of the various characteristics of comparative research, contributors to the *Education at a glance* series suggest that its roles include posing interesting questions, defining problems and suggesting a range of possible answers although it is recognised that a single answer can rarely be found for any problem. This series is seen as useless for direct copying or quick fixes for policy problems; rather its use lies in outlining alternative approaches to problems and elaborating the institutional conditions in which solutions may be available.

Reform of technical education and training in Great Britain: Comparison of institutional learning in Europe

Storge (1994) notes the flood of recommendations, guidelines, programs and pilot projects at the level of the European Union. Storge considered the impact of comparative analysis on the development of national education and training systems by comparing the organisational, vocational training and industrial relationships of various countries, which was to be added to an existing comparative study of France and Germany. The results of the study indicated that an international comparison results in different local and national outcomes. Furthermore the study showed that there was awareness that problems similar at first glance require different solutions in the context of different countries. The common ground shared by European countries does not exclude differences and diversity that would be automatically anticipated between European and non-European countries.

South Australian State Government industrialisation strategies

Stuchbury (1986) explains a gap analysis of the South Australian economy in which industries were compared. The gap analysis resulted in a report presenting ridiculous suggestions for developing the South Australian economy

to reflect the Australian economy as a whole. These recommendations were made despite the fact that the resource allocation of South Australia varies markedly from that of the nation as a whole. The suggestion of rubber goods as an item for production in South Australia serves as a vivid example of why gap analysis is misleading. The State's strengths in resources, skill base and industrial expertise were not considered to be important in recommending production of rubber goods. Variation from the national average is the theoretical principle on which shifting productive emphasis is based. Comparisons with national and international averages are an issue investigated at length in chapter 4.

Conclusions

This chapter has dealt with issues relating to the data used in international comparisons. The chapter explained a number of the faults and flaws introduced into comparative studies in the data collection and compilation processes; the purpose of this being the identification of the best practice for undertaking international comparisons and analysing results from them. These methods will be discussed in detail in chapter 6 and chapter 7 of this report. Suggested methods for undertaking these studies draw extensively on the concepts of comparability discussed above.

There are several practices currently being implemented or introduced to data collection and comparative analysis recommended for retention. Several changes and developments are also suggested which are expected to increase the validity and accuracy of the data, changes which will, in turn, result in more plausible and credible outcomes. The following chapter examines the issue of the theoretical validity as it relates to the current mode of international comparisons. It is improbable that the faults with the current crop of international comparisons of education lie only with the data side of the comparisons.

Results of international comparisons may be presented in a range of forms; for example, variations in training investment between countries. A country may be said to be under-investing for two reasons. First, there may be less expenditure on training in real terms of dollar value than undertaken by competitor countries. Second, the relationship between training investment and other sectors must be taken into account; where the hours and monies invested may be the same but because of lower actual skill levels, a situation of under-investment applies. Greater investment in training is required to achieve the skill proficiencies found in comparable countries.

4 The 'average' country

THE AIM OF this chapter is to highlight some of the flaws that emerge from the theory of comparative analysis, the basis of the publications reviewed in chapter 2.

In consideration of the concepts of output from training and education and the learning processes encouraged and adopted in particular countries, it is unusual for these characteristics to be examined in the context of the 'whole' country. This means that studies tend to focus on the systems and structures associated with VET and pay little regard to the additional cultural characteristics so important to developing a successful system. Adding to problems associated with the narrow focus of the studies, data tend to be generalised which leads researchers to believe that countries are similar and that data derived from their systems are comparable.

The OECD in its various publications goes to great length to illustrate differences between the national VET systems of its member countries. International comparisons such as the *Education at a glance* series aim to measure the outcomes from these systems. One key assumption has been given little consideration throughout the publications. That is, are the VET systems of the countries included in the OECD analysis similar to such an extent that the outputs from them would be expected to be the same? Little evidence has been found to suggest that different national systems will produce similar outputs.

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The following chapter describes why countries should not be considered as comparable, even if their averages are similar, and why the data derived from their systems should be presented differently and used more carefully than is currently the case. The manner in which data are manipulated to make them comparable is discussed, as are the flaws with these methods. The chapter also examines why identical results from international VET systems would not be expected, even if they were to converge to become directly comparable systems.

Defining the 'average': Problems and concerns

The OECD uses the term 'average' or 'mean' to enable comparisons between countries using various indicators. This average is calculated using the

weighted mean method, taking into consideration the extent of an attribute in a country relative to the size of the country. One thing common to all international comparisons is that data must inevitably be generalised. Generalisation of national statistics has tended to lead researchers to believe that countries are like entities and that data derived from their systems are comparable. However, we will find that comparisons based on averages are not soundly based.

One way in which this generalisation is undertaken is through mathematical analysis of the national results. Basic calculations such as averaging of responses are undertaken. These simplistic mathematical analyses lead to greater problems when results are taken at face value or out of context. One of the major issues in international comparisons particularly in relation to those comprised of components derived from education and training statistics, is the 'average' country. Indices are developed in which countries are ranked according to scores they derive from various components. One such index is *The world competitiveness report* (IMD International 1998). Other comparisons to the average are derived from the weighted ranking of countries. The deviations experienced from the average are commonly used to justify policies and strategies to be implemented in various countries. It should be noted here that the use of such deviation analysis is thought to lack meaning because it does not consider those factors contributing to the figures presented. In addition, it does not consider that those countries deemed to be performing above the 'average' should reallocate some of their resources, or restructure their policies to bring themselves back in line with the 'average'. If this were the case, then all countries would have an equal distribution of resources simply distributed in different ways. This is clearly not the case. Therefore it makes little sense for simplistic attributes (indices) to be used in justifying why one country outperforms another.

In a study comparing the industries of nations, Prais et al. (1989 p.119) note:

> *In manufacturing, substantial international differences in productivity are not entirely surprising and can be understood in terms, for example of varying rates of adoption of advanced technologies, varying scope for large-scale operation and varying scope for specialization.*

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Prais et al. (1989) provide three examples of factors contributing to variation in the productive output of countries. In this chapter we will suggest there are five fundamental factors contributing to variation between countries and regions.

The final point that needs to be made in relation to 'average country' comparisons is that data are influenced by national frameworks, traditions and priorities. The relevance and applicability of data can vary both within and between countries. Some regions may be better suited to nationally derived policies than others.

The next sections provide evidence to show there is no worthwhile reason for pursuing a description of the 'average' country. The characteristics implied by

the notion of the 'average' country are misleading and inappropriate, a point often overlooked in comparative analyses.

Theoretical considerations

Michael Porter's work *The competitive advantage of nations* (1990) is a good starting point when considering international comparisons. The OECD education statistics measure countries against each other and provide insights into the strengths and weaknesses of nations. The reasons why some countries achieve greater international success than others may be explained by the statistics provided; however, there is likely to be a multitude of other factors influencing the degrees of relative educational strengths.

Porter provides four broad national attributes that shape the local environment and promote or impede the national competitiveness:

- factor conditions
- demand conditions
- related and supporting industries
- firm strategy, structure and rivalry

Porter has arranged these four attributes in a national 'diamond' with elements forming a mutually reinforcing system. Government is capable of influencing the composition of the diamond.

> *Government, at all levels, can improve or detract from the national advantage. This role is seen most clearly by examining how policies influence each of the determinants…Policies implemented without consideration of how they influence the entire system of determinants are as likely to undermine the national advantage as to enhance it.*
>
> (Porter 1990, p.73)

Education crosses and blends into other economic sectors and social institutions (US Department of Education 1997, p.3/1). VET, with its associated economic and social effects is almost completely contained within the 'blended' sector of education.

Absolute and comparative advantage

The theory of comparative advantage, first presented by Ricardo (1817), is founded on the principle that each country is best at producing one output relative to all possible outputs. Outputs include natural, manufactured and social goods and services. The theory of comparative advantage, and its principles, serve as an example of why decision-making based on international comparisons is fundamentally flawed.

Comparative advantage of production is the reason for trade between various locations. If each location produces that output which it does most efficiently and then trades with the rest of the world, the productive capacity of

the world would be maximised. It is, however, impossible for all countries to produce enough output to fulfil demand from the rest of the world, and there are not enough countries to produce all possible outputs. Thus, decision-makers are faced with the dilemma of a need to produce a mix of outputs. What mix of outputs will produce maximum benefits? It is apparent the answer to this question depends on a myriad of factors including the mix of natural resources, skill endowments, the role of governments and the social characteristics of each country. Each of these characteristics and its potential impact on the decision-making process is examined in the following sections.

Resource allocation

Natural resources are fixed resources such as minerals, land allocation and geographical proximity. Other resources are created. These include the size of populations, a skilled and educated workforce, the level of technological innovation or development, and infrastructure that can be used in productive processes. It is impossible for any two counties or regions to have identical resource allocations, although similarities may exist. Despite variation in endowments, countries can utilise their resource endowments in different ratios to produce similar outputs; that is, there is a rate of substitution at which inputs can be substituted for another to produce the same output. The ability to recognise opportunities provided by resource allocations is a key element in the success or otherwise of countries.

Skill endowments

The allocation of human resources is an important factor in the development of a country. The number of people, the population density and the education and skill levels of the people are all considered to be important factors in enabling countries to compete effectively in the global economy.

Also related to the skill allocation is the labour market structure of the economy. The value attached to a degree qualification in one economy may be equivalent to that of a trade certificate in another. The value associated with the skills and qualifications depends on the types of goods and services produced within an economy. In a country where primary production is a principal output, trade-base skills associated with the production of primary products and the maintenance of machinery used in primary production would be highly valued. In the same economy, manufacturing-production knowledge and infrastructure would not be as highly valued. Countries' skill endowments determine which development paths can potentially be pursued in the light of natural and created resource endowments.

Government structure

Two important considerations in cross-country comparisons are government structures and political ethos. Countries with governments established on

socialist principles would not be expected to have social or economic structures resembling those of countries where government policies promote free markets.

Related directly to the method of governance, different government regimes are likely to collect data regarding the performance of their systems in different ways. In a free market economy it might be expected that data collected would under-represent actual events because of the need to rely on non-government data providers. In a government-led economy, the opposite might be true. On this basis it would appear that comparing data from countries with fundamentally different political regimes would result in a flawed analysis.

Not only are the political principles of government important, but so is the division of power between federal, regional and local governments since each level of government has different legislative powers. The extent of social and economic influence varies with the effectiveness of the legislative controls. In some countries local governments may be more influential than the regional or state governments. The extent of government influence determines which levels of government should be compared in cross-country analyses.

The issue of national political divides serves to highlight problems with the national average. National averages can, and do vary significantly within countries. Data are generally presented at a national scale. This representation tends to ignore the significant variation that occurs between the states and regions of a country. The level at which regional variation occurs is generally not described by the data available.

Social and cultural composition

The need to consider and describe society and culture is consistent with case study methodology utilised to study national systems. On the basis of cultural beliefs and societal expectations, variations in what are deemed acceptable responses to the problems being addressed by comparative studies are often displayed. Religious beliefs are the basis for expectations of differences in some societies' expectations of education and national economic output.

The cultural context for learning may also contribute to differences in expectations that affect not only what is taught but also when it is taught. The fundamental problem of cross-cultural comparisons relates to the need for detailed explanations of contextual differences among the countries to be included in the analysis.

One attribute that varies between countries is demographic attributes. Some countries have policies that influence the composition of families which in turn affect the demographic composition of the society. Religious and societal expectations relating to the family, standards of living and health also create demographic variation among countries.

Demographics are an important issue in comparative studies because countries differ in many ways. The legal ages of leaving school, the proportion of students continuing education, the practice of compulsory military service and the different career paths available, all vary among countries.

In a study of the influence of social variations on education and training, Gray (1993) found that although the German 'dual system' of apprenticeships is commonly cited as successful and provides the necessary pool of skilled labour, it is a system that is not readily exportable to other countries. Cultural determinants, in particular the constraints upon competition among German firms for skilled labour, and the flexibility of German educational institutions in adapting to industry needs, both present problems for the transfer of this system to other countries. Gray (1993) notes Thailand, having attempted to introduce the German training methods, is experiencing problems with transferability of systems and practices.

Dealing with social and cultural diversity

In considering societal perspectives, researchers should be advised against using causal models to study the complexities of education systems and their place in society. Such an approach is unable to adequately describe all influential characteristics that need to be considered when making policy decisions.

International studies should display sensitivity to the cultural contexts relating to the education dimensions assessed and included in the analysis. Study plans should be reviewed by individuals from participating countries to identify potential variation based on social and cultural expectations. Individuals reviewing plans should understand how the educational influences and cultural context shape, and are shaped by, policy.

Not all researchers involved in international comparisons of VET are convinced of the relevance of cultural components in the comparison of data. Finegold (1991) accepts the emphasis on institutional interdependence but questions the cultural contribution.

10

Labour market operations

Labour markets, particularly the way they operate, are another factor contributing to a country's uniqueness. Those countries where there is a high level of wage determination and extensive labour retention have different labour market characteristics from those countries free of wage settings and those with low labour retention. Furthermore, there is the issue of how employers perceive the skills of the labour force. If there is a poor perception of the skill level of workers, based on level of qualifications and related factors, then there will tend to be greater emphasis on importing labour.

Lynch (1993) noted that training systems are supported and influenced by a range of institutions. For example, one of the more important characteristics influencing the German training system is the percentage of the workforce that is unionised, and the role of the unions in the organisation of the work. Soskice (1990) argues that in order to understand why and how companies expect their workforce to be trained, a distinction must be made between the training strategies of medium and large firms, and those of smaller firms. These two authors raise important characteristics that need to be considered in comparisons of the organisational structure of the labour force and the structure of firms recruiting from the labour market.

Summary

Comparative advantage is presented as a theoretical basis by which the fundamentals of variation among countries can be explained. Five fundamental factors influencing characteristics of countries have been presented to show the 'average' country is a fallacy. The main point offered by this chapter is that all countries have a different mix of resources and outputs, and this variation makes them unique. There are variations in the cultural composition, the political emphases and the structures supporting the economic operations of the nations. Each of these characteristics makes it necessary for countries to develop individual solutions to training and education problems.

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5 Lessons from methods

INTERNATIONAL COMPARATIVE STUDIES can identify factors that promote educational achievement. The same comparisons can also identify those factors that do not make a difference. Such studies are difficult to perform however, because there are many uncontrolled variables of no relevance. Uncontrolled variables may make it difficult to reach reliable conclusions.

The many problems associated with international comparative analyses are investigated in subsequent sections. Problems examined include issues relating to data collection, theoretical considerations relating to the methodology and the applicability of the conclusions from the studies.

This chapter emphasises the importance of careful and relevant use of data and results of data analysis. It highlights that, in international comparisons, the context or circumstance of the data is of utmost importance to deriving solutions to domestic problems.

Data collection

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Although international agencies have been collecting and publishing comparative education and training data for at least two decades, for most of that period both the nature of the data and its collection were largely unexamined. Questions relating to the relevance and legitimacy of international comparisons have been raised by increased scrutiny of data used in such comparisons. It became apparent from the data being used in international comparisons that countries' definitions of education and training vary broadly. This variation affects the data collected and reported.

There are three primary problems associated with international comparisons directly attributable to the data:

- problems of scope or coverage
- problems of categorisation
- problems of measurement

Concerns regarding comparability call into question the usefulness of already published international statistics and indicators. Many users of the data see such tools as essential in determining the comparability of statistics although it is recognised that comparability problems may occur in the use of these materials. It was apparent from data available, that national data problems were multiple, widespread and substantial. Countries have interpreted data requests differently and made conflicting decisions about what to include and exclude from the reported figures.

Causes of data variation

> *Information from the OECD suggests that the USA and Japan do not place high priority on complying with OECD's need for comparability unlike European Countries.*
>
> (Office of Public Service and Science 1992, p.41)

Some countries are more likely to comply with the needs and requirements for data comparability than are others. The effort placed on compliance is likely to be directly related to the perceived relevance of the data to the country collecting it.

Problems with scope

Countries have various mixes of publicly and privately funded VET provision. Commercial-in-confidence conditions mean accurate and complete data are not always available from private providers. Some countries are better able to compile complete data from both public and private providers.

In some countries the VET classifications are based on institutions rather than courses attended or qualifications attained and where data are collected in this manner it is impossible to compare data effectively from one country to the next.

Vocational and technical programs include both school-based programs and combined school and work-based programs that are explicitly deemed components of the education system. Entirely workplace-based education and training for which no formal authority has oversight are not taken into account.

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Adding confusion to the scope of data, countries adapt their data-collection techniques. The adaptation of data-collection methods makes national comparison from year to year susceptible to significant error.

Problems with categorisation

The time at which data are collected can introduce the measurement problem of lags. Lags mean only part of the total population is included in the correct time series. This in turn means data are not strictly comparable with other data sets.

What is considered post-compulsory schooling and the age of participation in education varies markedly across countries. This problem is less prevalent in

developed countries, but variations in these characteristics should be considered when any age-based data are used to analyse the success of individual countries' VET sectors. Although enrolment in compulsory education is universal in most OECD countries, the age at which compulsory education ends varies from fourteen to eighteen years of age. In most countries the compulsory age is fifteen or sixteen. International comparisons based on the enrolment rates for the year in which compulsory schooling ends have to be interpreted with some caution, since leaving ages vary widely by country. For example, the enrolment rates for Portuguese thirteen-year-olds are compared with seventeen-year-old Belgians. The motives for early leaving by both of these groups are likely to differ considerably.

Identical VET courses are classified as 'upper secondary' courses in some countries and 'non-university tertiary' in others. The manner in which the classification of courses is undertaken is dependent upon the individual characteristics of a country. Characteristics considered in course classification decisions include both societal and economic factors. This problem is highlighted by some courses being classified as International Standard Classification of Education (ISCED) class 3 in one country and ISCED class 5 in another.

> *"When using the criteria for the classification of a programme, it should be borne in mind that the primary classification criterion is the educational content. It is of fundamental importance that institutional characteristics of national programmes are not used as substitutes for educational content. Sole reliance on institutional criteria could sacrifice the objective of international comparability for a wide range of comparisons since institutional structures are not usually internationally comparable.*
>
> *Flexibility is, however, required when applying the criteria to determine the level of education of an educational programme. While it is a principal objective of ISCED to promote the collection of comparable data on education for the various programme groupings, it is recognized that nationally disparate conditions may exist which preclude strict adherence to the level definitions. Two examples to highlight this are the starting age and the duration."* (UNESCO 1997)

The present skill level and economic development objectives of a country determine the ranking of courses. Differences in the organisation of the education programs of individual countries will clearly affect the relative proportion of students from a particular age enrolled at a particular level. In addition, identical courses may be presented in different manners across different countries and result in variations in the classification of courses.

Societal expectations impact on the data for VET. Compulsory military service in some countries means that the age of participants and qualifications attained from military service distort data from these countries. In addition to distortions of qualification levels, there may be variation in the age of students in education and training, and the skill base of the country may vary from non-militarised countries.

Finally, when one considers categorisation, it is important to remember comparisons based on 'highest qualification attained' are unsatisfactory from a VET perspective. Such data mask VET qualifications when a higher education qualification is also held by an individual with a VET-related qualification. Qualification comparisons are also flawed because the emphasis on qualifications gained rather than skills attained comes with no guarantee that there is a net gain to the economy from the additional qualifications. Credentials may merely serve to 'certify' the current skill base and to mask any stagnation in a country's development.

Problems with measurement

Data are time-specific, a factor which can cause problems with the way data are used in some international comparisons. Enrolment data may be collected either at a point in time, generally semester commencement dates, or across an entire year. The time at which data are collected influences how the student population is represented. Because of attrition rates, commencement data are likely to provide figures greater than those derived from assessment numbers. The time when data are collected varies from country to country. In addition to time considerations, there are two methods used for financial reporting; the first based on the calendar year, the other, on the financial year. Data collected using these two methods are not directly comparable.

Some countries collect data by survey rather than census. Different collection methods produce different outcomes for the same population. Surveys represent a point in time while a census may cover an entire year. Furthermore, those persons most likely to complete voluntary surveys come from two distinct groups: those who have been successful in their courses and those who are least satisfied with their courses. The method of data collection can introduce bias to the data collected.

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Commonly, countries present current enrolments based on head counts and do not provide the full-time equivalence. Those countries with high levels of part-time and casual students participating in VET will report higher levels of VET activity than those countries where flexibility of participation is not offered. Many countries do not recognise the concept of part-time study, although in practice at least some of their students would be classified part-time by other countries. In some countries part-time education is not completely covered by the reported data.

Summary

The time and money required to undertake detailed prior research and analysis for policy development is often not available. An example of the time pressures at work has been examined by Keep (1991) studying the introduction of Britain's Youth Training Scheme. As a result of time limitations comparative analyses are

able only to provide a 'snapshot' of the responses to common policy problems by various countries. Political necessity has demonstrated the need for the collection and provision of comparable data.

It is apparent that not all countries comply with statistical sampling techniques to ensure comparative analyses are accurate and meaningful. Countries whose education structures and statistics happen to match required categories can easily comply, while those whose statistics aren't comparable, face considerable costs and difficulties.

What appears to be required from the OECD and other statistical collection agencies is technical diplomacy, and direct assistance in restructuring data collection, classification and distribution. Because comparability is beneficial to all countries, not just those which must make the greatest adjustments, there are grounds for the development of an equitable cost distribution arrangement to aid the cause of international compliance.

6 Not average! Then what?

Factors of uniqueness

THE PREVIOUS chapters have covered the issue of the 'average' country as portrayed in international comparisons. It has been shown that the concept of the average country in the context of international comparative analyses has a flawed theoretical basis. As such, results from analyses based on the current crop of comparative analyses are likely to be of little use—at worst misleading—to the practitioners for whom the comparisons are generally conducted.

What are the alternatives to 'average' country comparisons? Countries with similar cultural and political backgrounds are most likely to have similar outputs and educational and training outcomes. Variation in outputs of countries with similar cultural and political backgrounds is likely to result from different geographical and resource characteristics. Countries may also have variation in outputs because they have supply and/or demand conditions not found in other countries. Replicating the success of a country or region is not simply a case of reproducing the contributing factors. The previous chapter served to highlight that there are factors beyond the control of governments and businesses contributing to the social and economic development of a nation or region.

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This chapter considers international statistics relating to the economic performance of countries. A link between the economic output and the educational achievement of countries is proposed and suggests a need for a close relationship between economic policies, taxation and the support and encouragement of the education and training sector.

Economic emphases

Table 6.1 highlights a number of countries in the OECD which have experienced shifts in sectoral employment between 1975 and 1995 and indicate significant variation in economic emphases of the countries included in the table.

Employment data are divided between three output sectors: primary, secondary and tertiary. The primary sector comprises agriculture, forestry, fishing and mining; the secondary sector comprises the construction and manufacturing industries. The tertiary sector comprises the service-producing industries. Data show that in 1975, with the exception of Turkey, all countries had a mix of employment with tendencies towards tertiary sector employment. In 1975 secondary-sector employment was a strong influence and the primary sector was marginally influential, with the exception of Turkey, Italy and France where the primary sector played a significant role in employment. Between 1975 and 1995 the shift in employment emphasis favoured the tertiary sectors at the cost of primary sectors. Primary sectors suffered the greatest declines in percentages of the labour force employed, despite having started from a relatively low employment base. Turkey remains the only country of those included in the table with a significant percentage of employment in the primary sector.

Germany and Italy both maintained relatively strong secondary sectors in 1995 and, France also maintains this sector as a major employer, based on 1985 statistics. The United States, Netherlands and Australia reported that, in 1995, nearly three-quarters of their employment was in the tertiary sector of their economies.

There have been changes in the sectoral employment of countries throughout the OECD. The influences on sectoral change in employment included the labour force, resource endowments, government policies and the adjustment processes of the economy. The adjustment processes of the economy were first explained as the 'cobweb theory' by Freeman (1971). The cobweb theory recognises training processes, wages, and outputs require time to adjust. The adjustment process is subject to various influences examined in chapter 4, including the society and economy. The amount of capital invested in the

Table 6.1 Civilian employment by sector (in percentages)

	1975			1985			1995		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
Australia	6.8	33.5	59.7	6.2	27.3	66.4	5.0	22.9	72.1
United States	4.1	30.6	65.3	3.1	28.0	68.8	2.9	24.0	73.1
France	10.3	38.6	51.1	7.6	32.0	60.4	4.7	N/A	N/A
Germany	6.8	45.4	47.8	4.6	41.0	54.4	3.3	37.5	59.1
Italy	16.7	39.2	44.1	11.2	33.6	55.2	7.5	32.3	60.3
Netherlands	5.7	34.9	59.4	4.9	28.1	67.0	3.7	22.4	73.2
Turkey	58.4	19.3	22.3	49.4	21.4	28.6	46.8	21.0	32.2
OECD Avg	12.7	34.8	52.5	9.4	31.5	59.2	8.6	26.7	59.9

Source: OECD 1997, *Labour force statistics 1973 1996*, Paris

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production of an output and the extent of labour force influence also contributes to the extent to which adjustment processes are able to occur.

Changing production and distribution

Production

Although not comprehensively shown by the data contained in table 6.1, there has been a shifting emphasis in production strategies and methods. Fordist, labour-intensive production methods utilising specialised skills and labour have been superseded. Flexible production methods with adaptable labour and high levels of mechanisation have been adopted as the common production method. There has also been an increasing tendency to centralise production efforts with the agglomeration of small-scale enterprises to develop 'economies of scale'.

Distribution

In the last 20 years countries have come to trade greater amounts of their production with other countries and increased value of investment funds transferred between countries. In general, countries and regions within them have become more interdependent for their social and economic success.

Shifting the emphasis

There has been a change in production emphasis and method along with recognition that returns to training and education are high for individuals, enterprises and government. So why isn't everyone promoting the role of education and training for development? In the provision of general training most systems are more or less successful in overcoming potential market failures. However, it remains difficult for single firms to move unilaterally from one system of production to another, because of the capital and skill investments that have been made in methods which are subsequently superseded. The cobweb factors proposed by Freeman (1971) explain why some systems are more adaptable than others. Training takes time; Freeman's theory suggests adjustment processes may be as long as 10 to 20 years, and is dependent upon the career development and demographic characteristics of the labour market.

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Data accuracy

Table 6.1 provides an example of the comparability problems discussed in chapter 3. Table 6.1 shows a number of cases where the year's employment for the three sectors does not sum to 100 per cent, as one would expect. Australia and the United States both have totals less than 100 per cent in 1985 figures. France is the only country for which there is no discrepancy in the total labour force in the figures presented. Rounding errors are likely to contribute to some of the deviation of individual countries from the total of 100 per cent per year; however, rounding is unlikely to explain all variation from expected totals.

There are no countries for which deviation from the expected total occurs in more than one year. Deviations from the expected total all occur in 1985 and 1995. One might well question the validity of the data contained in 1975 or investigate the definitions used to compile data for 1985 and 1995.

Educational emphases

Given the employment data contained in table 6.1 it would be unreasonable to expect the educational achievements of the countries to be identical. In fact one might reasonably expect that the Netherlands, Germany and Turkey would have distinctive qualifications and skills patterns since in 1995 these countries had the highest relative percentage of their labour forces employed in tertiary, secondary and primary industries respectively. This section will examine the differences in educational achievement between OECD member countries.

The emphasis placed on different skills in different countries is examined in table 6.2 data taken directly from *Education at a glance: OECD indicators 1998*. The perception of the state of the economy and the importance placed on education and training in the society determines to what extent systems are developed and what methods are adopted. These factors in turn affect the outputs from education and training.

After consideration of the economic outputs of a range of OECD member countries, the relationship these figures have with the educational outputs of nations needs to be explored. There is extensive documentation (Adams 1994; OECD 1996, 1997) indicating a distinctive relationship between outputs and skills. Chapter 4 presented five fundamental factors that affect both skills and outputs. In the context of this report the relationship between training and education and production is considered as being two-way.

> *It is argued that in export-oriented trade regimes there will be greater incentives for enterprises to undertake training than in inward-looking economies where policies may seek to protect firms from global competition. More specifically it is suggested by the Bank that particular policies such as minimum wages, guarantees of employment, or narrow differentials between trainee and skilled worker wages (all of which may have a social justification) can also have a direct bearing on whether firms or individuals invest in training.*
>
> (Adams 1994 cited in King 1993, p.213)

20

Table 6.2 displays variations in the qualification distributions throughout countries of the OECD. It is apparent that the expectations derived from data in table 6.1 are supported by the data in table 6.2. Of all the countries presented, Italy has the highest proportion of population with only early childhood, primary and lower secondary education and the lowest with university level education. Germany has the highest percentage of those with upper secondary education and the Netherlands has the second-highest percentage of their population with university level education. The evidence is somewhat biased by

Table 6.2: Percentage of the population aged 25 to 64 years of age by highest completed level of education (1996)

Country	Post-compulsory school				
	Less than upper secondary	Upper secondary education	Non-university tertiary education	University level education	Total post-compulsory
Australia	37	35	11	17	63
United States	11	52	9	28	89
France	34	44	11	11	66
Germany	14	61	10	15	86
Italy	54	34	*	11	46
Netherlands	29	43	*	27	71
Turkey	78	13	*	9	22
OECD Avg	34	43	11	15	69

* *data not applicable or included in another column of the table*

Source: http://www.oecd.org/els/edu/EAG98/Tables/a1.xls

the Netherlands' third-highest ranking of early childhood, primary and lower secondary education.

Notable also are the statistics from Australia where the country has a similar qualifications distribution to that of the Netherlands, but with a somewhat stronger bias towards primary qualifications, a situation which emphasises the role of primary industries in Australia.

The concept of 'credentialism' is a fundamental consideration when examining data in table 6.2 and relates to the skills and qualifications actually required to undertake tasks in the various countries. Skills required vary among countries and depend upon the level of technological innovation, the goods and services produced and the level of output quality expected from the industry. It is apparent from data contained in table 6.2 that the problem of 'credentialism' is emerging in the United States and the Netherlands. These countries have populations aged 25 to 64 holding university qualifications at a rate almost double that of Australia, despite having only slightly higher percentages of labour forces employed in tertiary employment sectors.

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Summary

If it is assumed that primary, secondary, and tertiary output production relates to low, medium and high-skilled occupations, despite some clear exceptions, then the data contained in table 6.1 which details employment by sector can be correlated to that contained in table 6.2 which shows levels of education.

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7 Putting theory into practice

IN THE CONTEXT of study, research or enquiry into VET, there is no one methodology, no single research strategy, descriptive or explanatory, quantitative or qualitative, longitudinal or cross-sectional that is superior to all others. The overriding concern must always be that the methods used in research must be appropriate so that credible answers are provided to the questions posed and subjects being investigated. Regardless of the topic, these methods must adhere to appropriate practices for systematic inquiry. The principles for such inquiries are outlined below.

Rather than suggesting what ought to be studied or which proposed studies would be of greatest significance, the criteria suggest how a study ought to be conducted and those questions which research proposals need to address. The research practices will be shaped by the views of what ought to be studied and the significance of the issues as determined by project developers.

It will be clear that not all principles discussed in the subsequent sections are relevant to all comparative studies. Furthermore, many of the principles describe ideals that may at times be impossible to attain. Because of practical constraints—limited time, limited money, and knowledge—every study necessarily involves compromise. Researchers must consider which issues are most relevant to their own study. All potential issues should be considered in the design of any study.

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Recommended data

> *The focus and scope of the comparison is limited by the nature and quality of the data collected from, and reported by, the providers themselves.*
>
> (Anderson 1994, p.123)

Errors are an unavoidable aspect of data collection. Knowing the potential errors of the data is most important when considering its potential use. If multiple data sets are to be combined, then the potential for error increases significantly and a margin for error of 100 per cent becomes a possibility. The aim of this section is not to determine those data best able to provide the least margin for error; rather, to describe how best to collect the data and minimise errors. Methodologies for using the data will be presented in the following sections.

Data collection

The collection methods of data for international comparisons of VET require further development and refinement. Although, development of a standard methodology and adoption of common definitions for VET terminology will not guarantee effective or accurate comparisons, the development of methods for determining why variation or similarities in statistics occur will nonetheless be of benefit. The development of agreed comparative analysis methods will necessarily determine the data that is required to be collected.

Data collected over time, in time-series or cohort designs can be of significantly greater value than single, cross-sectional studies, especially when data are collected at regular intervals. High priority should be placed on continued international involvement in studies, particularly where failure to participate would jeopardise valuable trend lines. Conversely, because substantial alterations to the content or administration procedures used in data collection over time, studies developed should strive to include state-of-the-art design and implementation.

The type of analysis for which the data is to be used influences the way in which the data should be collected. A suitable data collection methodology is essential to ensure that both the content and format of the data are adequate for credible international comparative analyses.

Data content

Finding key indicators of educational outcomes and a means for assessing the effectiveness of the systems so that they are comparable internationally is a difficult task. Each country has its own educational structures and objectives. Data can be measured in two ways, either as a stock or a flow. A stock is a measure taken at a point while a flow is measured over a period of time.

There are a number of suitable characteristics that can be used as a basis for undertaking international comparisons of VET. Such characteristics currently providing useful data include benchmarks of competencies in core school subjects and the competencies of adults and how adult skills can be applied in society and the labour force. Other appropriate data in terms of international comparability of VET relate to inputs and throughput of education systems; that is to say, how much is spent on each level of education and who participates in each level. These data allow analysis of overall trends in participation and the various ways in which countries allocate resources to education. In addition to describing the international context, valuable insights into domestic situations can be obtained from the data used for international comparisons.

Stock data are the data most commonly collected by VET bodies. However, with the introduction of new methods or definitions for data collection, stock data sets can become incomparable. The emphasis on outcomes from the

Australian system since 1993 has made many data sets either side of this date incomparable because they measure different characteristics of the system.

Flow data generally suffer from poor comparability as they are commonly collected during one-off studies and cover a variety of time periods—monthly, quarterly or annually. It should be emphasised that—while one-off national studies are useful—to obtain the greatest benefit from data collected during these studies, the data must be internationally comparable; that is, data should measure comparable attributes in other countries.

Some data problems can be handled by changing only the international data collection process; others require changes or additions to the national education systems of the countries concerned. Every improvement requires changes to be made to the international data submissions of one or more countries although many of the changes required can be assisted by, or rely on, actions from international agencies. The OECD and the United Nations Educational, Scientific and Cultural Organisation (UNESCO) are working to ensure that universal definitions used in data collection become available. Data collection agencies should make the utmost effort to ensure they conform to the definition and collection standards being set by these organisations. Much time and effort is wasted if countries collect perfectly accurate statistics which are not comparable with other countries.

Improved international definitions and instructions can provide only the framework for reporting comparable statistics. By themselves they do not change any country's data. Only the officials and statisticians of a country can act to fill the data gaps and alter, or override, the national definitions and realign data categories to international conventions. In maintaining accurate data collection systems the US Department of Education has emphasised the importance of distinguishing between country-level remedial actions that affect the country's international reporting and actions that impinge on the country's underlying data collection system (US Department of Education 1997, p.2/32 -2/33).

Data format

Statistics on education expenditures, like those associated with other public concerns, are collected not for the edification of the statisticians but in the hope that policy-makers, researchers and others will use them for socially productive uses.

The format in which data are presented is of utmost importance to users and analysts alike. National education data is influenced by numerous factors including demographics and trends in employment. Descriptions of characteristics influential on education should accompany any national education data.

Unit record data may distort reality and provide results more easily misinterpreted and misused. Ratios of characteristics relative to potential

population for each country are more useful to policy-makers and comparative analysts than are raw data. The size of the demographic cohort is also determined by the compulsory schooling age and various other factors discussed at length earlier in this report.

Both the number of statistics and number of countries for which valid comparative statements can be made have undoubtedly increased, but information on both the degree of improvement and where improvements have occurred are lacking. This highlights a problem for policymakers and other potential users. Improvements notwithstanding, years may elapse before users will be able to trust international education statistics to the same degree as they trust internationally compiled national economic accounts.

Finally, we should consider the level of numerical accuracy at which data are collected, analysed and compared. One major government data-collection agency notes:

> *Given the uncertainties concerning the data it is probably helpful to restrict the inter-country comparisons to the first figure after the decimal point (Office of Public Service and Science, Office of Science and Technology 1992, p.58).*

The level at which analyses are undertaken can place too much reliance on the data used and thus provide unrealistic results.

Recommended methodologies

Having considered the various methods for data collection in the previous sections, it is important to use the data effectively. Methods of comparison for deriving credible results are presented and examined in the following section. If international comparisons are to be technically valid and useful for policy development, issues of data and methodological reliability and validity must be addressed outside the context of individual projects.

34 Developing appropriate methods

The most important consideration in determining what methods are appropriate for comparative analysis is the intended use of the results. The next consideration is the content of the analysis. Other considerations—although no less important—include which countries should be compared and how variation among countries should be represented.

One of the problems with international comparisons is that different measurements and different countries being compared create difficulties. The data of two countries may be comparable with each other on one variable and not on another. As the number of countries and variables increases so does the likelihood of non-comparability.

Idiosyncrasies of national education structures, data collection and reporting methodologies make it impossible to compile a generic caveat to be used when comparing countries. Detailed local information is the only means by which

analysts and policy-makers can accurately determine any meaningful relationship between one country and the next. Knowledge of the 'home' country is not enough to enable meaningful comparison with the rest of the world. Strategies such as diagrammatic representations of individual countries' VET systems are necessary to standardise people's understanding of a system. Describing countries concurrently assists in understanding other countries and in overcoming the temptation to classify countries and their characteristics using over-simplified terms.

Keep (1991 p.41) noted in an analysis of the UK's policy debate that little comparative work has examined those countries which share a common linguistic and cultural heritage with the UK, such as Canada, New Zealand and Australia. He goes on to comment that these are not countries with international reputations for operating highly successful VET systems (a point that might be taken up) but they do offer opportunities to pursue issues, such as the influence of specific cultural and industrial relations heritages on VET. Because of their shared language and the extensive linkages between their higher education institutions they are countries in which comparative advantage may easily be undertaken.

When developing a project, data on which conclusions from analyses are based must be obtained at both the unit record and system level. If similarities or differences between these two levels are identified, it may be possible to make 'better' policy decisions than those based on data derived from only one data source.

The single most important step in ensuring sound methodology is to provide clear, detailed and operational definitions to users of comparative analyses. Such guidelines assist in eliminating misinterpretation as a cause of comparability problems. Definitions and descriptions also aid by identifying necessary changes in, or additions to national education statistics systems.

Deriving credible and useful results

One of the ways in which credible results can be obtained from comparative analyses is by comparison with similar studies. Proposals for studies need to consider the potential overlap of any new study with other relevant studies. The capacity for overlap in calibration, comparison, and cross-validation should be weighed against the potential value of new and distinctive data.

In cases where comparability problems stem from limitations of the underlying national statistics data gaps, insufficient disaggregation, or unusual national data categories countries would have to take more drastic steps to provide comparable data. For example, if a country has no mechanism for collecting data on the finances of private educational institutions, it cannot comply with instructions to include such spending, no matter how clear the instructions are or how co-operative the country.

Theoretically grounded studies are of increasing interest to policy-makers as nations intensify their investments in human capital. Such studies provide information which can assist in shaping broad policy options. It should be noted, however, that the comparability of the results from such studies depends on the degree of similarity between the countries included in the study. Results from theoretical studies must be presented in a detailed and clearly defined context.

If results from comparative analyses are to be meaningful to a wide range of users, researchers must cross academic boundaries to describe clearly the context from which data are gathered. Descriptions need to be as detailed and all-inclusive as possible in order for those with a limited knowledge of the countries and regions compared to gain a perspective that offers them a uniform and relevant context to the study.

Evaluating international comparisons

A significant proportion of this report has focussed on considering the 'pros and cons' of international comparisons. There have been numerous reasons proposed for why comparisons are undertaken, what they are used for and how they are conducted. This report has focussed on comparisons relating to education and training. Equally there are issues and points raised that apply equally to any type of international comparative analysis.

The following points are important aspects to be considered when using findings or results from comparative analyses.

- Are the data comparable?
  Have data been uniformly collected?
  Are the data presented in a uniform and meaningful manner?
  Can the data be compared with data from other comparative analyses?
- Are the countries included in the comparison reasonably comparable?
  Do the countries have similar education systems?
  Do the countries have similar economic outputs?
  Are there geographical social, political or historical similarities between the countries?
- Is the background of national systems and situations presented to enable a 'reasonable' understanding of the context from which data are derived?
- What are the conclusions intended to be used for?

Persons working on international comparisons should give serious consideration to these questions prior to beginning work. The same care must be taken by those reviewing or using output from international comparisons.

This is not to say however, that if a comparative study does not fulfil any one of the criteria listed above that it should be dismissed as an unreasonable or invalid comparison. Quite the opposite may be the case. If a comparison contains characteristics unable to be explained by the data presented, it may be that the comparison has dealt with unique features of national systems that contribute to their outcomes and output.

8 Overview and conclusions

THERE HAS BEEN a tendency in international comparisons of VET to blame education and training problems on specific features of a specific national education and training system when these problems are in fact symptomatic of much wider trends and issues. Streeck (1985) recognised that cross-national differences relating to social interpretations of the employment relationship form complex patterns that are difficult and challenging to disentangle. Interpretation of arrangements and policies relating to VET provision is particularly difficult. Despite the challenging nature of this interpretation, understanding variations in these factors is arguably a necessary condition for sound policy formulation.

Research findings

Various policy and academic questions were presented in this study to justify the use of international comparative analyses of VET. Examples of work that used comparative analysis to derive results, including the OECD's *Education at a glance*, were also examined.

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This report uncovered five principal factors responsible for flaws in the results derived from current comparative analyses. Despite these potential flaws, the need for international comparative analyses remains, since little is to be gained from undertaking national case studies independent of each other and then bringing them together for comparison. This is not to say that national studies should be discontinued; rather, there is an identified need to introduce the practices required for international comparisons when conducting nationally based studies. Definitions, data collection and reporting should be uniform and comprehensive. Results from national studies should also include relevant social, economic and political information which provides a context for the analysis.

Questions remain about the relevance of findings of international comparisons and the applicability of results of international comparisons in a national context. It could be that a country is out-performing another on one

characteristic of their education system, but are there reasons for this? It is not the position or relative outcomes from the system that are the important factors in international comparisons. What is important is the ability to explain and justify the variations between those countries or regions included in the analyses.

The report has illustrated that the methods for international comparisons are flawed for three reasons. There are: problems of scope or coverage, problems of categorisation and problems of measurement. Consequently, recommendations relating to data collection, content and formats have been made. Efforts by international organisations such as the OECD are recognised for their attempts to improve the accuracy, comparability and validity of data collected at national levels for use in international comparisons.

In addition to problems associated with the data there are theoretical reasons why international comparisons and their findings may be unsatisfactory. These theoretical problems derive from the context in which national data is collected. Each country has a unique education and training system, a characteristic that is often overlooked in comparative analyses.

Conclusions

Ultimately, policy development by governments must take into consideration the circumstances of the 'home' country. International comparative studies emphasise the need to consider the role of government. Other attributes also considered to be important in policy decisions based on findings from comparative analyses are the performance of domestic markets, domestic output capacity and concerns about social equity.

No single version of best practice for systems of VET has emerged from this study of the usefulness and efficacy of comparative studies. Governments will need to remain cautious about proposing universal policy prescriptions based on international comparative analyses. More appropriate policy is likely to emerge by consolidation of VET culture and practice already established in specific countries. (King 1991, Middleton 1994, Grootings 1994).

Understanding of the local context, its society and economic situation and the gathering of reliable data are essential in developing meaningful results from comparisons. Because of social and economic and political differences it is unlikely that all-encompassing international comparative analyses will be developed and conducted. Attempts by the OECD to standardise data collection processes and to ensure that uniform definitions are adopted, means that those countries that can be reliably compared, will have the data to adequately describe observed differences. When uniform data is available for a range of countries, more reliable and meaningful policy decisions will be possible.

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